

CLAIMS

What is claimed is:

1. A guide for positioning a medical device within a body; said guide comprising: means for attaching a medical device support to the body of an imaging probe; and means within said support for releasably holding a medical device at a predetermined angle with respect to said probe such that images produced as a result of radiation from said probe serve to position said needle for insertion within said body.
2. The guide of claim 1 wherein said attaching means comprises: slots for fitting over the proximal end of said image probe without interference with said radiation from said probe.
3. The guide of claim 2 wherein said releasably holding means comprises: at least one tab for maintaining said medical device at said predetermined angle.
4. The guide of claim 1 wherein said attaching means comprises: at least one pivot point at the proximal end of said medical device support.
5. The guide of claim 1 further comprising: means for controlling the release of said medical device after positioning within said body.
6. The guide of claim 5 wherein said controlling means comprises: a latch for sliding over said medical device.
7. The guide of claim 5 wherein said controlling means comprises: a latch for pivoting over said medical device.
8. The guide of claim 1 wherein said medical device is selected from the list of: a needle, a catheter, a drill bit, a cutting blade.

9. A guide for fastening to an ultrasonic probe, said probe operative for transmitting signals from said probe's proximal end through a patient's body for the purpose of creating an image; said guide comprising:

at least one support for releasably attaching to a proximal end of said probes, said guide having a longitudinal seating area for positioning a rod therein;

a latch for temporarily holding said rod in fixed position with respect to said patient so that a proximal end of said rod will follow a known trajectory with respect to a generated image of said patient's body; said latch fitted over said rod where said rod is seated in said seating area; and

a tab on said latch operable for allowing said latch to release said rod.

10. The guide of claim 9 wherein said latch is positioned perpendicular to said seating area and wherein said latch slides across said seating area.

11. The guide of claim 9 wherein said support comprises:

a bracket for mating to said probe at said proximal end of said probe, and
at least one pivot point for allowing said guide to release from said bracket.

12. The guide of claim 9 wherein said latch comprises:

an overhang portion for positioning above said rod when said rod is in said seating area, said overhang portion preventing said rod from becoming disengaged from said guide without first moving said latch to its open position.

13. The guide of claim 9 wherein said latch comprises:

a tapered wedge portion for positioning below a seated rod.

14. The guide of claim 13 wherein said latch comprises:

a flexible tab for preventing said latch from moving from its closed to its open position.

15. The guide of claim 14 wherein said moving is perpendicular to said seated rod.

16. A method of releasably attaching a medical device to a probe, said method comprising:

positioning said medical device along the longitudinal axis of said probe;

clamping a positioned one of said medical devices with respect to said probe so that the angle of attack of said clamped medical device remains constant with respect to the proximal end of said probe;

generating at least one image of structures below the surface of an object over which said proximal end of said probe moves, said image generation resulting at least in part from signals emitted from said proximate end of said probe;

sliding a proximal end of said clamped medical device toward said surface of said object along a trajectory predictable as a result of said generated image;

continuing to slide said proximal end of said clamped medical device along said trajectory to a position below said surface of said object; and

releasing said clamped positioned medical device from said probe while said proximal end of said medical device remains positioned below said surface of said object.

17. The method of claim 16 wherein said positioning comprises:

inserting said medical device into a guide attached to said proximal end of said probe.

18. The method of claim 17 wherein said guide has a predefined closing angle with respect to said proximal end of said probe and wherein said trajectory is predictable at least in part by said closing angle.

19. The method of claim 18 wherein said closing angle is calibrated to a depth below said surface of said object.

20. The method of claim 17 wherein said guide is releasably connected to said probe.

21. The method of claim 16 wherein said clamping is controlled at least in part by a slide positioned transverse to said longitudinal axis.

22. The method of claim 20 wherein at least a portion of said slide contains a ramp.

23. The method of claim 16 wherein said medical device has a round cross-section.

24. A guide for attachment to the proximate end of a sonic probe; said guide comprising:

a releasable latch for mating with said proximal end of said probe;

a channel for accepting the longitudinal axis of an elongated medical device, said channel lying along the longitudinal axis of said probe when said guide is mated with said bracket, said channel defining a pre-established closing angle with respect to a location below the surface of an object in proximity to said proximal end of said probe; and

a slide for traversing said channel, said slide applying controlled clamping force on an accepted elongated medical device.

25. The guide for claim 24 wherein said slide further comprises:

at least one latch for maintaining said applied controlled clamping force.

26. The guide for claim 25 wherein said controlled clamping force allows the proximal end of said clamped elongated medical device to slide toward said surface of said object under control of a user.

27. The guide of claim 24 wherein said releasable latch comprises:

a bracket releasably affixed to both said guide and said proximate end of said probe.

28. A method of releasably attaching a medical device to a probe, said method comprising:

releasably connecting a bracket to the proximal end of said probe;

releasably connecting a guide to a connected bracket, so that the longitudinal axis of said guide falls along the longitudinal axis of said probe;

positioning said medical device along said longitudinal axis of said guide; and

releasably clamping a positioned one of said medical devices with respect to said guide so that the angle of attack of said clamped medical device remains constant with respect to the proximal end of said probe;

29. The method of claim 28 further comprising:

generating at least one image of structures below the surface of an object over which said proximal end of said probe moves, said image generation resulting at least in part from signals emitted from said proximate end of said probe;

sliding a proximal end of said clamped medical device toward said surface of said object along a trajectory predictable as a result of said generated image;

continuing to slide said proximal end of said clamped medical device along said trajectory to a position below said surface of said object; and

releasing said clamped positioned medical device from said probe while said proximal end of said medical device remains positioned below said surface of said object.

30. The method of claim 29 wherein said guide has a predefined closing angle with respect to said proximal end of said probe and wherein said trajectory is predictable at least in part by said closing angle.

31. The method of claim 30 wherein said closing angle is calibrated to a depth below said surface of said object.

32. The method of claim 28 wherein said releasably clamping is controlled at least in part by a slide operating transverse to said longitudinal axis.

33. The method of claim 32 wherein at least a portion of said slide contains a ramp.

34. The method of claim 28 wherein said medical device has a round cross-section.

35. A method for releasably attaching a needle to the proximal end of an image generating probe, said method comprising:

positioning a guide support bracket at said proximal end of said probe, said guide support bracket adapted for accepting, one at a time, a plurality of needle guides each having either a different angle of attack or accepting a different gauge needle;

selecting a needle guide having a particular angle of attack with respect to said proximal end of said probe, said selected needle guide accepting a particular gauge;

releasably attaching a selected one of said needle guides to said attached bracket; and

releasably attaching a needle to an attached one of said needle guides so that the longitudinal axis of said needle lies along the longitudinal axis of said probe, said needle having said particular gauge.

36. The method of claim 35 further comprising:

while said needle is releasably attached to said needle guide, sliding the proximal end of said needle toward said proximal end of said probe, said needle following said angle of attack to a point under the skin of a patient to said focal point.

37. The method of claim 36 further comprising:

when said needle has been positioned under the skin of said patient, releasing said needle from said needle guide so that said probe can be removed while said needle remains positioned under said skin.

38. The method of claim 35 wherein said selecting comprises:

removing said needle guide from a plurality of needle guides of like gauge but having different angles of attacks, said plurality of needle guides being held by a common bond.